The role of information for the customer journey in mobile food ordering apps

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Abstract

Purpose – This article aims to determine how to influence the customer journey of mobile food ordering applications (MFQA) users. It researches how available information could influence customers' intention to use MFOAs platforms in the pre-purchase stage and explores the potential of personalized information to improve customer satisfaction with these services in the post-purchase stage.

Design/methodology/approach – This research followed a mixed design, combining qualitative (focus groups) and quantitative (online survey) research and using both content analysis and PLS-SEM.

Findings – Two types of available information (firm-generated information and online customer reviews) had a positive influence on the behavioral intention to use MFOAs. Additionally, findings showed that different web personalization strategies, namely content personalization, functional personalization, and system-driven personalization, were useful tools to create customer satisfaction with this type of platform.

Research limitations/implications – The article discusses limitations regarding the sample and sampling process, indicator variables, and measures.

Practical implications – The present research provides actionable insights for online food delivery providers.

Originality/value – This article addresses a research gap in the literature and provides a novel and richer understanding of customer behavior toward mobile food delivery platforms. Also, it adds to the personalization research by identifying and testing a range of Web personalization strategies.

Keywords – Customer journey, Mobile food ordering applications, Web personalization; User-generated information; Firm-generated information; Customer satisfaction

Paper type: Research paper

Introduction

The online shopping experience is a major topic in marketing research due to the rapid development of information technology and the growing importance of the Internet (Pigatto et al., 2017; Suhartanto et al., 2019; Xu & Huang, 2019). The prevalence of mobile devices and the development of mobile commerce made online-to-offline businesses quite popular by linking suppliers and users through mobile applications (Kapoor & Vij, 2018; Lee et al., 2019; Ramos et al., 2019; Rita et al., 2018; Xu & Huang, 2019). In this context, the online food delivery market has been reshaped allowing consumers to dine at home with the same food they would enjoy at a restaurant (Hirschberg et al., 2016).

The online food delivery market includes two different delivery methods: restaurant-to-consumer delivery, which involves the preparation and direct delivery of meals by the restaurant, and platform-to-consumer delivery, which is characterized by the assignment of online meal order and delivery to an online meal-delivery platform (Blumtritt, 2018; Yeo et al., 2017). The focus of this study is on platform-to-consumer delivery. These platforms usually consist of Mobile Food Ordering Applications (MFOAs). According to a study conducted by Deloitte (2019) in four European countries, 59% of adults ordered food from an MFOA at least once a month; further, adults aged between 18 and 39 years old showed a usage rate of these applications above 71% in the last seven days. The growing popularity of these platforms is justified by the convenience they provide since that through a single platform customers can access the menus of a wide range of restaurants and compare the different options available, place their orders, pay, and track orders as they are being prepared and delivered (Deloitte, 2019). Regarding these platforms, the leading players in Europe are Just Eat, Takeaway.com, Delivery Hero, Deliveroo, Glovo, Wolt, and Uber Eats (Sifted, 2020).

Only a narrow set of studies have approached MFOAs (Cho et al., 2019; Kapoor & Vij, 2018; Lee et al., 2017; Lee et al., 2019; Ray et al., 2019; Xu & Huang, 2019; Yeo et al., 2017). Prior research merely emphasized the pre-purchase and purchase stages of the customer journey by focusing on testing the factors that contribute to the customer's intention to use and actual use of online meal delivery services; thus, some authors highlighted the need for additional research on consumer behavior and

consumption habits regarding these services, especially concerning the pre-purchase and post-purchase stages (Kapoor & Vij, 2018). Additionally, most of the extant studies were conducted in Asian countries, though, more recent studies were carried out in other countries (Al Amin et al., 2021; Belarmino et al., 2021; Dirsehan & Cankat, 2021; Hussein & Mansour, 2020).

This study contributes to filling this gap regarding the customer journey in the mobile meal ordering industry, particularly in the platform-to-customer delivery segment, by contributing to three research fields. First, this article contributes to the online food delivery services literature by unveiling how to influence the customer's intention, usage, and satisfaction with an MFOA. Instead of identifying the factors that lead customers to use online meal delivery services as performed by previous authors, this research adds to the current knowledge on how customers are influenced by the available information online – i.e., user-generated information (online customer reviews and online customer ratings) and firm-generated information - when choosing an MFOA in the pre-purchase stage of the customer journey. Likewise, it seeks to understand how personalized information can generate customer satisfaction with those applications in the post-purchase stage of the customer journey. Farther, the current study also adds to the personalization research by identifying and testing simultaneously a range of web personalization strategies - content, interface, functional and social - and approaches – user-driven and system- as antecedents of customer satisfaction. In this view, by contributing to the understanding of MFOAs and the restaurant sector, this research adds to the existing knowledge in services by a better understanding of the customer journey of a particular type of customer.

Several authors manifested that new dimensions of web personalization are of great interest and some of the existing dimensions, namely presentation and relational personalization, need to be more explored (Haiyan & Poole, 2009; Kumar & Desai, 2016). Finally, the proposition of two forms of information – available and personalized – as key influencers of customers' behaviors in the pre-purchase and post-purchase stages of the customer journey, respectively, meets the priority research of the Marketing Research Institute (MSI) to describe the customer journey along the purchase funnel and to develop strategies to influence that journey (Marketing Science Institute, 2018), contributing to the customer journey literature.

The article is organized as follows. Firstly, relevant literature is reviewed to establish key relationships and support the research model. Sections 3 and 4 address the methodology and the empirical results, respectively. Finally, section 5 presents the main conclusions, limitations, and recommendations for future research.

Literature review and conceptual model

The customer journey in online meal delivery services

Customers move towards a purchase through a set of four stages: awareness, consideration, purchase intent, and customer satisfaction (Colicev et al., 2019). This customer journey was simplified by Lemon & Verhoef (2016) into three stages: pre-purchase, purchase, and post-purchase. The present study adopts Lemon and Verhoef's conceptualization of the customer journey; accordingly, the pre-purchase stage consists of the user's experience before installing the MFOA, the purchase stage includes the installation and usage of the application, and the post-purchase stage encompasses the user's satisfaction the application.

Online food delivery services can be defined as internet-based services that provide customers the ordering and delivery of food to the desired location (Ray et al., 2019), but are not responsible for the meal preparation (Ray et al., 2019). In the platform-to-consumer delivery segment, online food delivery services work mainly through mobile food ordering applications (MFOAs). These mobile applications provide an innovative and convenient channel to search for restaurants among several alternatives, place meal orders from the available menu, and make payments without any direct interaction with the restaurant (Alalwan, 2019).

The growing importance of MFOAs in the restaurant market emphasizes the need of investigating customers' behavior in this market segment. Hitherto, with some exceptions (e.g., Al Amin et al., 2021; Belarmino et al., 2021; Dirsehan & Cankat, 2021) most literature was conducted on Asian countries and it was devoted to comprehending the factors that induce customers to explore and use MFOAs in the pre-purchase and purchase stages of the customer journey. Lee et. al (2017) found that perceived usefulness and perceived ease of use affected the attitude toward the use of MFOAs in Korea. In China, Cho et al. (2019) discovered that convenience, design, trustworthiness, and various choice foods of food delivery applications have a positive impact on user's perceived value, whereas Yeo et al. (2017) identified convenience motivation and post-usage usefulness as drivers of the attitude towards online food delivery services. Xu & Huang (2019) analyzed how restaurant-generated information cues in online-to-offline mobile applications influenced diners' expectations and suggested, for future research, the inspection of those cues on other outcomes such as

purchase intention. Research in Indonesia identified food quality and e-service quality to have a positive impact on customers' perceived value (Suhartanto et al., 2019). Finally, in India, Kapoor & Vij (2018) stated that four key attributes of MFOAs – visual design, navigational design, information design, and collaboration design – have a positive effect on placing an order. The post-purchase stage of the customer journey remains unexplored and a lack of insights regarding strategies to influence customer behavior in the application funnel of MFOAs was identified.

More recently, responding to the growing interest of society in the COVID-19 pandemic, researchers have studied the use of MFOAs in the context of the pandemic. For instance, during the pandemic period, Dirsehan and Cankat (2021) showed that MFOAs satisfaction plays a critical role in developing restaurants' brand satisfaction and loyalty, while Belarmino et al. (2021) compared the satisfaction of customers with online meal delivery platforms such as MFOAs before and during the quarantine. In both periods, food quality was a significant factor in customer satisfaction with online meal delivery platforms. They also found that some other variables such as price became less important during the quarantine while service speed significantly impacted satisfaction only during the quarantine.

Firm-generated information and user-generated information

The search for both internal and external information is an important step in the customer's decision-making process (Park & Stoel, 2005). It is particularly relevant in the context of online services where the purchase risk is perceived as higher, leading customers to do research to deal with uncertainties regarding the potential favorable or unfavorable outcomes (Park & Stoel, 2005). Based on prior research, two types of information that influence consumer purchase intention have been distinguished: firm-generated information and user-generated information (Lee et al., 2017; Yoon et al., 1993).

Firm-generated information consists of any information that is available by the firm on its platforms (Daiya & Roy, 2016). Available research has mostly focused on firm-generated communication, such as ads (Pehlivan et al., 2011) and social media content (Colicev et al., 2019; Daiya & Roy, 2016; Hu et al., 2019). This study understands firm-generated information as the general information provided by MFOAs to their customers in mobile applications stores. Previous research highlighted the

importance of firm-generated information for the customer's purchase process by determining that the information about a product or service should be displayed to the customer because it reduces enhances customers' intention to buy by lowering customers' risk perceptions (Boshoff, 2003; J. Park & Stoel, 2005). Accordingly, this study proposes that:

H1: Firm-generated information positively influences customers' behavioral intention to use an MFOA.

User-generated information, also designed as word-of-mouth (WOM), has been proven to have a significant impact on customer purchase decisions (Arndt, 1967), being more influential than traditional means of marketing given its higher credibility (Viglia et al., 2016), especially in the context of the service (Hogan et al., 2004). With the advent of the Internet, electronic word-of-mouth (e-WOM) emerged, consisting of "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via Internet"(Hennig-Thurau et al., 2004). Online customer reviews and online customer ratings are two forms of e-WOM that have been studied in the last years (Alalwan, 2019; Chevalier & Mayzlin, 2006; Filieri, 2015; Zhang et al., 2019) since they constitute a powerful source of information for potential and actual customers and are positively related with instant and long-term business performance (Wang et al., 2018). The present study focuses on the impact of online customer reviews and online customer ratings on the pre-purchase stage of the customer journey of MFOAs.

Online customer reviews consist of positive, neutral, or negative peer-generated product evaluations created by potential, former or actual customers and displayed on the firm or third-party websites (Filieri, 2015; Mudambi & Schuff, 2010). Such online reviews are often checked by potential customers because they provide a hint of the purchase and usage experience of other users (Thakur, 2018), helping them in the process of purchasing products or evaluating alternatives (Alalwan, 2019). Some researchers highlighted its positive effect on sales (e.g., Chen & Xie (2008) and Zhu & Zhang (2010)) and its influence on customers' attitudes and purchase decisions (Tata et al., 2019). Online ratings allow customers to numerically rate their shopping experience

according to a scale that typically ranges from one to five stars (Zhang et al., 2019). The numerical rating has been used as a proxy for e-WOM, since it allows customers to make direct comparisons between products or services based on the ratings of other customers (Zhang et al., 2010), including its strengths and weaknesses (Filieri, 2015). Previous studies showed that online ratings positively influence consumer purchase decisions (Alalwan, 2019) and product sales (Chevalier & Mayzlin, 2006; Moe et al., 2011). However, the relative importance of these two types of e-WOM is still inconclusive (Chevalier & Mayzlin, 2006; Hong & Park, 2012; Viglia et al., 2016).

From the fulfilled literature review, it is propounded that:

H2: User-generated information influences customers' behavioral intention to use an MFOA, such that:

H2a: Online customer reviews have a positive effect on customers' behavioral intention to use an MFOA.

H2b: Online customer ratings have a positive effect on customers' behavioral intention to use an MFOA.

Intention to use, usage, and satisfaction

The Technology Acceptance Model (TAM) is basilar in comprehending the predictors of human behavior toward potential acceptance or rejection of technology (Diop et al., 2019); thus, the intention is appropriate to test consumers' behavior (Chao et al., 2011) and it consists on the individual's perceived probability of using a system (Diop et al., 2019). In the consumer's willingness and perspective to use online services whereas actual use consists of the frequency of using those services during a given period of time (Sujatha & Sekkizhar, 2019). Thus, we define behavioral intention as the consumer's willingness and perspective to use MFOAs and actual use as the frequency a customer uses MFOAs during a given period of time.

The extant literature shows that intention influences the actual behavior of a customer to perform a purchase (He et al., 2008; Laohapensang, 2009) and, in the online context, Sujatha & Sekkizhar (2019) proved that there is a direct effect of the behavioral intention of individuals toward m-services on the actual use of m-commerce. Therefore, it is proposed:

H3: Behavioral intention to use MFOAs has a positive effect on the actual use of MFOAs.

A possible outcome of service usage is customer satisfaction. Customer satisfaction can be briefly described as the assessment of the overall consumption experience (Tran et al., 2019). It also constitutes an indicator of the company's performance, given its direct and positive relationship with economic results (Anderson et al., 2004). In the online shopping context, customer satisfaction is usually referred to as e-satisfaction (Tran et al., 2019) and it consists of the customer's contentment regarding his/her prior purchasing experience with a certain e-commerce firm (Anderson & Srinivasan, 2003). The current study embraces this conceptualization of customer satisfaction and applies it to the research topic in question by defining it as the contentment of the customer considering prior purchasing experience with an MFOA. The link between usage and customer satisfaction has been studied for several years but the extant literature finds this relationship to be mixed and inconclusive since some researchers stated that usage leads to user satisfaction (Bokhari, 2005), others that user satisfaction leads to usage (Bokhari, 2005) and the remaining that usage could be both an antecedent and consequence of satisfaction (Bolton & Lemon, 1999). Considering the adopted e-satisfaction definition the present study establishes actual usage as a predictor of customer satisfaction (Brill et al., 2019; Chung et al., 2020) and not vice-versa, and proposes:

H4: Actual usage of MFOAs has a positive impact on customer satisfaction with those applications.

Web personalization

Personalization is commonly reputed to be the main driver of marketing efficiency (Kalaignanam et al., 2008) and the most effective strategy for achieving business success online (Salonen & Karjaluoto, 2016). It can be defined as the strategy to proactively custom products and the customer purchasing experiences according to the tastes of individual customers based upon their personal and preference information in

order to deliver a targeted solution (Chellappa & Sin, 2005; Kwon & Kim, 2012). Web personalization is viewed as a sub-topic of personalization research and can be described as the process of individualized matching to consumer needs and preferences in the web context (Salonen & Karjaluoto, 2016), by adjusting all aspects of a website that are visible to the user in order to ‘‘deliver the right content to the right person in the right format at the right time to maximize immediate and future business opportunities” (Tam & Ho, 2006).

Three major dimensions of web personalization implementation have been identified in the extant literature: the “what” dimension concerns the features of the system that are personalized, the “to whom” dimension pertains the target of personalization and the “who” dimension relates to the author of the personalization (Haiyan & Poole, 2009).

Regarding the “what” dimension, Kumar & Desai (2016) distinguished four features of the system that can be operated to deliver personalization to the user: the content (i.e., the provided information), the user interface (i.e. how the information is presented to the user), the user navigation (i.e. what link structure of the website is presented) and the functionality (i.e. what users can do with the system) (Kumar & Desai, 2016). Accordingly, Wang & Yen (2010) and Desai & Kumar (2016) discriminated against three types of personalization – information personalization, presentation personalization, and navigation personalization – and studied its effects on users’ intention to continue to use a website. Further, Haiyan & Poole (2009) proposed four ideal types of personalization: commercial personalization, architectural personalization, and instrumental personalization - corresponding to the personalization of the content, the interface and the user’s navigation, respectively - and a new type of personalization, relational personalization, that intends to fulfill the user’s needs for socialization and a sense of belonging (Haiyan & Poole, 2009). From the performed literature review, four types of personalization are suggested:

- Content personalization – corresponding to content personalization (Kumar & Desai, 2016), commercial personalization (Haiyan & Poole, 2009), or information personalization (Wang & Yen, 2010);

- Interface personalization – also called user interface (Kumar & Desai, 2016), architectural personalization (Haiyan & Poole, 2009), or presentation personalization (Wang & Yen, 2010);
- Functional personalization – is referred to as user navigation and functionality (Kumar & Desai, 2016), instrumental personalization (Haiyan & Poole, 2009), or navigation personalization (Wang & Yen, 2010);
- Social personalization – is based on Haiyan and Poole's relational personalization concept (Haiyan & Poole, 2009).

The "to whom" dimension refers to the target of personalization, which can be a specific individual or a category of individuals (Haiyan & Poole, 2009).

Lastly, the "who" dimension relates to the authorship of the personalization: user-initiated (or explicit) personalization, which is usually called customization (Haiyan & Poole, 2009; Kwon & Kim, 2012; Sundar & Marathe, 2010), and system-initiated (or implicit) personalization (Kumar & Desai, 2016). User-initiated personalization provides users a range of options and facilities in the form of information and interfaces layout, allowing them to continuously monitor their changing individual tastes and preferences (Kumar & Desai, 2016). Examples of user-initiated personalization features are the theme, font size, and color preferences, favorite page layout, display of the number of information, and a set of multiple search options, e.g. gender, brand, price range, or product type (Desai & Kumar, 2017). System-initiated personalization exhibits personalization features by considering users' implicit needs through the analysis of their navigational behavior and their demographics based on users' profiles (Desai & Kumar, 2017). The system is conceived to personalize content for different users based on information collected explicitly, by directly asking the user personal data, such as name, contacts, birth date, gender, or address, or implicitly, by tracking user behavior using cookies (Sundar & Marathe, 2010). Examples of system-initiated personalization include greeting the user by his/her name upon login (Sundar & Marathe, 2010) and product suggestions based on purchasing history or geolocation (Desai & Kumar, 2017).

This research addresses only two of the referred three dimensions, "the what" and "the who" dimensions, because we considered that, to improve the customer experience, it is not relevant for the user to know if the personalization was developed to his/her

individual needs or if it was designed for a group of customers similar to him/her ("to whom" dimension), as long as he/she receives the desired level of personalization.

The effect of web personalization on customer satisfaction

Customer satisfaction is usually seen as a driver of customer retention, ensuring reputation and repetition of purchase while strengthening the relationship between the customer and the seller (Shaladdin et al., 2018). Satisfied customers show a tendency to repurchase and recommend products or services whereas dissatisfied customers are more likely to switch between brands (Anderson & Srinivasan, 2003). Several authors identified personalization as a predictor of customer satisfaction (e.g. (Al-Kasasbeh et al., 2011; Ball et al., 2006; Halimi et al., 2011). Accordingly, this study proposes personalization as a potential strategy to create customer satisfaction with online food delivery services as explained below.

Regarding the "what" dimension, there is a lack of empirical evidence to determine the importance of each one of the four identified types of web personalization – content, interface, functional and social personalization – on the post-purchase stage of the customer journey. The preferred web personalization strategy studied by the literature is content personalization. Some researchers tested its effect on pre-purchase and purchase contexts. For instance, Serino et al. (2005) hypothesized that content personalization impacts customers relationships by increasing trusting beliefs (pre-purchase stage), whereas Ho & Tam (2005) proposed that content personalization increases the likelihood of a product being considered (pre-purchase stage) and chosen (purchase stage) by the customer. Regarding the post-purchase stage, the effect of content personalization on customer satisfaction was tested by Liang et al. (2006). Other authors went one step further in research by considering more than one web personalization strategy in the post-purchase environment. Kwon & Kim (2012) considered both content and interface personalization and suggested that the two types of web personalization have various effects on customer retention. Wang & Yen (2010) assessed the influence of information personalization, presentation personalization, and navigation personalization on the intention to continue to use a website. However, to our knowledge, there is not research comparing the effectiveness of the four different personalization types on customer post-purchase behaviors, especially on customer

satisfaction, by testing them simultaneously. Thus, the following hypotheses are proposed:

H5: Web personalization types have a positive effect on customer satisfaction with MFOAs, such that:

H5a: Content personalization has a positive effect on customer satisfaction with MFOAs.

H5b: Interface personalization has a positive effect on customer satisfaction with MFOAs.

H5c: Functional personalization has a positive effect on customer satisfaction with MFOAs.

H5d: Social personalization has a positive effect on customer satisfaction with MFOAs.

Considering the "who" dimension of web personalization, research has highlighted the supremacy of user-initiated personalization in building customer satisfaction. Liang et al. (2006) proposed that user involvement in the personalization process influences user satisfaction in a way that user satisfaction is higher when explicit user feedback for personalization is considered in comparison to systems that do not require explicit user feedback; however, results showed that both strategies performed equally well. Yet, other authors enhanced that user-initiated personalization is a more effective strategy to drive customer satisfaction than system-initiated personalization (Kwon & Kim, 2012). Consequently, it is anticipated that, although both user-initiated personalization and system-driven personalization create customer satisfaction, user-initiated personalization will result in more satisfied customers than system-initiated personalization in the MFOAs context:

H6: Web personalization approaches have a positive effect on customer satisfaction with MFOAs, such that:

H6a: User-driven personalization has a positive effect on customer satisfaction with MFOAs.

H6b: System-driven personalization has a positive effect on customer satisfaction with MFOAs.

H6c: User-driven personalization generates a higher level of customer satisfaction with MFOAs than system-driven personalization.

The proposed research model of this study is presented below in Figure 1.

Figure 1 about here

Research method and instruments

Our exploratory research followed a mixed design, combining qualitative and quantitative research. Qualitative data were collected via focus groups and analyzed using content analysis; then, results were used to develop measurement items for web personalization' constructs, and quantitative data was gathered using an online questionnaire. Two eligibility criteria were defined to qualify for the present study: first, to be a former and actual user of MFOAs, since usage experience was required to answer the questions of the study; second, to be currently living or studying/working in the Metropolitan Areas of Lisbon or Porto, since these are the two Portuguese geographical areas with the greatest presence of mobile food ordering services.

Qualitative research

Qualitative two online focus groups were executed to overcome the non-existence of measurement items for web personalization constructs due to a lack of quantitative research regarding the topic. Each group had six participants, resulting in a total sample of 12 MFOAs. Each focus group discussion lasted between 90 to 120 minutes, and it was conducted using a semi-structured guide with the following main themes of discussion: personalization authorship; content personalization; interface personalization; functional personalization; and social personalization. Qualitative analysis was performed using content analysis matrices. The main conclusions of this exploratory study are as follows.

Regarding web personalization approaches, the participants considered that both user-driven personalization and system-driven personalization are necessary, valuable, and important; however, their importance varies according to the user lifecycle: in the initial phase of using the application, user-driven personalization is considered more relevant, since the personalization by the platform is dependent on it to achieve an adequate personalization, but as the user becomes a regular customer system-driven personalization can enrich and facilitate the user's experience. Examples of features related to each strategy were presented, and the general feedback was as follows: content personalization was well accepted, with the exception of a feature that suggested that the application could regularly share curious statistical data about its consumption behavior with the user; interface personalization was considered important by 75% of the participants, since it makes the application more appealing, pleasing,

interesting, and provides greater simplicity and visual objectivity as well as the possibility of self-expression by the user; functional personalization was considered important, useful, practical and convenient, since it makes the experience faster, easier and more convenient for the user; and finally, social personalization was considered important but not essential and its main advantage was to serve as a bridge of contact with interesting third parties. These insights were used to develop measurement items to measure web personalization-related constructs for the online questionnaire that can be found in Table 1.

Quantitative research

The research instrument used for quantitative data collection was an online questionnaire designed using the online Qualtrics software. The instrument was initially written in English and then translated to Portuguese.

A pilot questionnaire was conducted using a convenience sampling technique for data collection. This pilot was applied to 30 individuals from the target population and it was available for three days. The purpose of this pilot was to validate the participant's ability to understand each question and its relevance to the study, as well as to assess the time required to complete the questionnaire.

The final questionnaire was administered between April 30, 2020, and May 18, 2020. The chosen sampling method was snowball sampling, a non-probability sampling method that selects an initial group of respondents, usually at random, and subsequent respondents are based on referrals (Malhotra & Birks, 2006). The respondents were selected through social media, university platforms, and circles of friends and family, resulting in a final sample of 341 complete qualified answers. Of the 341 participants, 69% were female, 30% were male and 1% preferred not to answer. The average age of the sample was 29 years, with the youngest respondent being 18 years old and the oldest 67 years old. The two most representative age groups were the youngest generations: 18-24 (46%) and 25-34 (32%). The demographic information of the sample regarding age and gender is consistent with previous studies in foreign countries which stated that most of MFOAs' users are under the age of 39 years old (Comscore, 2019; Daxue Consulting, 2019; Statista, 2020; Zion, Spangles, & Hollmann, 2019) and are female (Comscore, 2019; Daxue Consulting, 2019). Most respondents had a higher education degree (74%), followed by high school graduates (24%).

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to analyze the results from the questionnaire. The final sample of 341 participants meets the minimum sample size required for this type of analysis. There was no missing data in the sample, since all the questions of the questionnaire were mandatory, except the ones regarding demographic data. Some variables presented a nonnormal distribution, but that was not an issue since PLS-SEM is a non-parametric model, being able to handle extremely non-normal data (Hair et al., 2017). PLS-SEM is taken to test a complex model with many constructs, indicators, and paths without imposing distributional assumptions on data (Hair et al., 2019).

Measurement items

The theoretical framework of the present study includes 12 reflective constructs, each one measured through multiple indicators. Except for web personalization-related constructs, the reflective indicators were adopted from previous research with appropriate adaptation to the MFOAs' context and are summarized in Table 1. A 7-point rating scale with a range from 1 - Strongly Disagree to 7 - Strongly Agree was chosen to measure the respondent's level of agreement with each item. Given the scarcity of literature regarding web personalization, qualitative research was conducted to develop items to measure both web personalization approaches and web personalization types' constructs. Concerning the two web personalization approaches, "User-driven Personalization" items were based on the performed qualitative research whereas "System-driven Personalization" items were adapted from Chellappa & Sin (2005) and also complemented with qualitative research insights.

Regarding the defined web personalization types, we adopted an approach similar to Fan (2007) by using an interpretive analysis to match the four types of web personalization identified by extant research with several personalization features by comparing their personalization goals. Then, we used the proposed web personalized feature(s) to measure the corresponding web personalization strategy. Web personalization types and respective features are summarized in Table 2. Therefore, the participant was presented with a set of MFOAs' features and a group of items to measure them using the same 7-point rating scale. The measurement items were adapted from Fan's (2007) Web Personalization Measurement Instrument (WPMI) and developed according to the qualitative research results.

Table 1 about here

Table 2 about here

Results

Measurement model

There are four key criteria to evaluate reflective measurement models: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Hair et al., 2011; Hair et al., 2017). First of all, the indicators' reliability was assessed through the analysis of the loadings, which should be greater than 0.7. All indicators have loadings greater than 0.7, except OR3 (0.649), U1 (0.036), U2 (0.467) and SP4 (0.571) – Appendix 1. OR3, U2, and SP4 were retained for further analysis since their values are between 0.4 and 0.7 and their deletion from the model do not substantially increase the composite reliability or the average variance extracted (Hair et al., 2017; Henseler et al., 2009), as can be seen in Table 3, and U1 was excluded due to its low loading.

Regarding internal consistent reliability, we evaluated the Composite Reliability (CR), which should be equal to or greater than 0.7 (Henseler et al., 2009) for a construct to be considered valid. All the constructs present higher values than 0.7 in CR, except "MFOA Usage" with a value of 0.657; however, values of 0.6 to 0.7 are considered satisfactory in exploratory research (Hair et al., 2011), which is the case, confirming construct reliability.

A measure of convergent validity is Average Variance Extracted (AVE) and its value should be at least 0.5, meaning that the construct explains, on average, more than half of its indicators' variance (Hair et al., 2011; Hair et al., 2017; Henseler et al., 2009). Since all the constructs present AVE values greater than 0.5, convergent validity is confirmed.

Internal consistent reliability and convergent validity results are presented in Table 3.

Table 3 about here

Lastly, discriminant validity means that the construct must share more variance with its own indicators than with other constructs in the path model (Hair et al., 2017). To assess discriminant validity, two measures should be considered: the Fornell–

Larcker criterion and the cross-loadings. The Fornell–Larcker criterion states that the square root of the AVE of each construct should be greater than its highest squared correlation with any other construct (Hair et al., 2011). Additionally, an indicator's loading with its corresponding construct should be higher than the cross-loadings (i.e. its loadings with the other constructs) (Hair et al., 2011). Also, a full collinearity test was conducted using the WarpPLS software. Average Block VIF (AFIF) = 1.369 and Average Full Collinearity VIF (AFVIF) = 1.676, presenting values below the threshold of 3.3, which suggests that the model is free of common method bias (Kock, 2015, 2020). Since the previous criteria were verified, there is evidence of discriminant validity. Accordingly, the reflective measurement model is adequate since it meets all four required criteria.

Table 4 about here

Structural model

The structural model represents the relationships between the latent constructs (Hair et al., 2011). The path coefficients and R^2 are presented in Figure 2.

Figure 2 about here

A bootstrapping procedure with 5.000 resamples was used to estimate the statistical significance of the path relationships. The proposed research model explains 20.0% of the variation in Behavioral Intention to Use MFOAs, 17.8% of the variation in MFOA Usage, and 40.3% of the variation in Customer Satisfaction.

Firm-generated Information ($\hat{\beta}$ = 0.285, p < 0.05) and Online Customer Reviews ($\hat{\beta}$ = 0.230, p < 0.05) are statistically significant in explaining the Behavioral Intention to Use MFOAs, which endorses hypotheses H1 and H2a; however, Online Ratings ($\hat{\beta}$ = 0.074, p > 0.05) is not statistically significant in explaining the same construct, not supporting H2b. Behavioral Intention to Use MFOAs ($\hat{\beta}$ = 0.422, p < 0.05) was found to be statistically significant in explaining MFOAs Usage, supporting H3. Regarding the post-purchase stage of the customer journey, MFOAs Usage ($\hat{\beta}$ = 0.273, p < 0.05) as well as two web personalization strategies, Content Personalization ($\hat{\beta}$ = 0.144, p <

0.05) and Functional Personalization ($\hat{\beta}$ = 0.189, p < 0.05), were found to be statistically significant predictors of Customer Satisfaction, supporting H4, H5a, and H5c; yet, hypotheses H5b (Interface Personalization ($\hat{\beta}$ = 0.025, p > 0.05)) and H5d (Social Personalization ($\hat{\beta}$ = -0.057, p > 0.05)) were not supported. Lastly, concerning the two web personalization approaches, both User-driven Personalization ($\hat{\beta}$ = -0.145, p < 0.05) and System-Driven Personalization ($\hat{\beta}$ = 0.327, p < 0.05) have a statistically significant relationship with Customer Satisfaction; however, in opposite directions: while System-driven Personalization has a positive effect on Customer Satisfaction, User-driven Personalization shows a negative impact on Customer Satisfaction. Therefore, H6b was supported but H6a and H6c were not.

Additionally, VIF values are below the recommended threshold of 5, the highest being 1.847 (System-driven Personalization), indicating that multicollinearity is not a critical issue in the structural model (Appendix 2).

In conclusion, from a total of 12 hypotheses, 7 are supported. Results are summarized in Table 5.

Table 5 about here

Discussion

This research found that two types of available information (firm-generated information and online customer reviews) had a positive influence on the behavioral intention to use MFOAs. Additionally, findings showed that different web personalization strategies (content personalization, functional personalization, and system-driven personalization) were useful tools to create customer satisfaction with these apps.

Theoretical contribution

The present research provides a richer understanding of customer behavior toward mobile food delivery platforms and actionable insights for online food delivery providers. Most of the proposed hypotheses were supported, resulting in an acceptance of 7 of the 12 hypotheses. Findings reveal that among the constructs related to available information, firm-generated information and online customer reviews have a positive effect on the behavioral intention to use MFOAs, whereas online customer ratings do not have a statistically significant impact. These results suggest that customers who perceive firm-generated information and online customer reviews as informative have a higher intention to use the MFOA, which is consistent with preceding research that stated that the quality of the information provided by the firm and the quality of the information contained on online customer reviews have positive effects on customers' purchase intentions (Lee et al., 2017; Park et al., 2007).

Regarding the post-purchase stage, results show that higher usage of MFOAs results in higher customer satisfaction with the platform, which is consistent with existing literature that highlighted that usage has a positive effect on user satisfaction (Lee et al., 1995, as cited in Bokhari, 2005).

The empirical results support web personalization as an effective strategy to create customer satisfaction with MFOAs, being consistent with earlier studies that tested the relationship between these two constructs in other contexts (Al-Kasasbeh et al., 2011; Ball et al., 2006; Kwon & Kim, 2012); however, not all types of web personalization are suitable for generating satisfaction in the MFOAs context. System-initiated personalization was found to be the major determinant in customer satisfaction with MFOAs, suggesting that users highly value platforms that comprehend their implicit needs based on their demographical profile and navigational behavior and that

facilitate the use of the application, whereas user-initiated personalization, that requires user's effort, has a negative impact on customer satisfaction.

Concerning web personalization strategies, content personalization, which focuses on providing relevant content to the user (Kumar & Desai, 2016; Wang & Yen, 2010), and functional personalization, are positively related to users' perceived ease of use and usefulness (Wang & Yen, 2010), are determinant factors of customer satisfaction with MFOAs.

This study contributed for a better understanding of the role of information and information technology on the customer journey in the specific context of MFOAs of platform-to-consumer delivery. More specifically, the research identified how customers are influenced by information online when choosing a MFOA in the pre-purchase stage of the customer journey and distinguished between user-generated information such as customer reviews and firm-generated information.

Another source of originality and contribution of this research was its focus not only in the pre-purchase stage but also in the less studied post-purchase stage by analyzing the factors of customer satisfaction with MFOAs, showing how personalized information generates customer satisfaction with MFOAs. A more specific contribution was the identification and testing of different personalization strategies (content, interface, functional and social) and approaches (user-driven and system-driven) as antecedents of customer strategies.

To sum up, this research contributed for a better understanding of the customer journey in the services sector by putting together primary contributions of the literature on both information technology and marketing in an original research model about the role of information for the customer journey.

Managerial implications

From a managerial point of view, firm-generated and user-generated information are powerful tools in the pre-purchase stage of the customer journey of MFOAs users. Thereby, food delivery organizations should seek to provide high-quality information to their potential customers; accordingly, companies must regularly review and update the information available on mobile applications stores, such as contacts, tutorials on how the application works, acceptable payment methods, changes to the delivery fee pricing policy and new features available in the platform. Additionally, food delivery

organizations should encourage users to review the service, which can be achieved by providing an incentive to customers (such as a discount code or a free delivery rate) in exchange for their honest opinion about the application. Further, since the content of the reviews is relevant to the users' decision process, businesses should seek to reduce negative reviews and promote positive rich reviews; in this sense, two actions can be taken: first, control and management of manipulated or fraudulent reviews must be carried out; second, firms should identify strategies to maintain customers satisfied, since a valuable outcome of customer satisfaction is positive WOM, such as online customer reviews (Thakur, 2018).

Considering that the major factors that drive the usage of MFOAs are performance expectancy, effort expectancy, and ease of use (Lee et al., 2019; Ray et al., 2019), suggesting that what users highly value in these platforms is the possibility to place an order as quickly and easily as possible, it is logical that content and functional personalization, by presenting meal suggestions and by creating tabs to save favorite orders, respectively, make the customers' experience more convenient by promptly providing them the resources to place an order, improving customer satisfaction.

Other web personalization strategies that are more concerned with different aspects of the application such as aesthetics or socialization, as is the case with interface personalization and social personalization, respectively, are not significant to customer satisfaction in this context. Accordingly, practitioners should implement functionalities that allow the operationalization of content and functional personalization strategies, if they don't already.

This study proposes two examples of content personalization, such as providing special offers and promotions tailor-made for the customer and providing personalized recommendations of restaurants and meals, and four examples of functional personalization, such as the option to save the restaurants that the user wants to try in the future (*wishlist*), the existence of a favorites' tab with the restaurants or meals most requested by the user, the option to save and manage multiple delivery addresses and the option to pre-order the meal well in advance (hours, days). Companies must proactively identify new interesting features, according to the emerging needs of users, and make better use of the personal information voluntarily provided by the customer by using it to make the application as personalized as possible. Customer satisfaction is

a key factor for successful businesses since it has an impactful effect on customer retention and customer loyalty (Rodgers et al., 2005); accordingly, and taking into account that personalization is a driver of satisfied customers, practitioners should consider including this strategy in their marketing plan.

Limitations and future research

Although the present study adds valuable knowledge to the mobile food delivery services research, some limitations must be recognized and considered in future research. The first limitation concerns the characterization of the sample and the nature of the sampling process used. The study was carried out in a single country, Portugal, more specifically in the metropolitan areas of Lisbon and Porto. Also, all the respondents have used an MFOA at least once, but the frequency of using this type of mobile application was not addressed; thus, results can be influenced by different degrees of familiarity with MFOAs. Thereby, in the future, it is necessary to investigate whether the conclusions drawn from the study are applicable in different geographical contexts and to consider the influence of distinct consumption patterns regarding usage frequency, gender, and, among others, eating habits. When studying the influence of these variables, another interesting avenue of research is to study the impact of major events such as the COVID-19 pandemic on MFOAs. Quantitative data collection for this research was carried out in May 2020 just after the beginning of the pandemic and during a period of several restrictions when there was a strong demand for these services. It would be interesting to research whether there have been important changes in the demand for these services and how the use of MFOAs and consumer satisfaction have changed as a result of these environmental changes in the sector.

Secondly, the indicator variables used to measure most web personalization-related constructs were developed based on qualitative research. This study suggested that user-driven personalization has a negative impact on customer satisfaction regarding MFOAs, which is not consistent with previous literature (Kwon & Kim, 2012). Further research must test and improve the proposed measurement models for these constructs regarding web personalization types and web personalization approaches. Another limitation that can be pointed out to the model proposed in this research concerns the studied relationship between MFQA usage and customer satisfaction (H4). In fact, it can be argued that the relationship is bi-directional in the

sense that, as proposed, MFQA usage influences customer satisfaction, but it is also expected that customer satisfaction influences MFQA usage. We believe that the relationship studied in this article (H4) is more original and makes sense in the context of electronic markets. However, future studies may also investigate the inverse relationship that is how customer satisfaction influences MFQA usage.

Lastly, the model explains only 20.0%, 17.8%, and 40.3% of the variances of behavioral intention to use MFOAs, actual usage of MFOAs, and customer satisfaction in this type of application, respectively. Even though the results show the influence of available information, namely firm-generated information and online customer reviews, on the behavioral intention to use MFOAs, other important drivers in the pre-purchase stage identified by previous literature, such as convenience, design, trustworthiness, various choice foods, perceived usefulness and perceived ease of use, are not included in the research model. Thus, future work can compare the importance of these factors with that of the available information in the behavioral intention to use MFOAs. Similarly, it may be useful to test the potential of other strategies besides personalization to generate consumer satisfaction with this type of platform, such as co-creation by using e-WOM in the post-purchase stage. In short, since the proposed model evaluated only the impact of information – available and personalized – on the customer journey of MFOAs users, high R^2 values were not expected; thus, other relevant factors can be identified to provide a deeper and richer understanding of MFOAs.

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Appendices about here

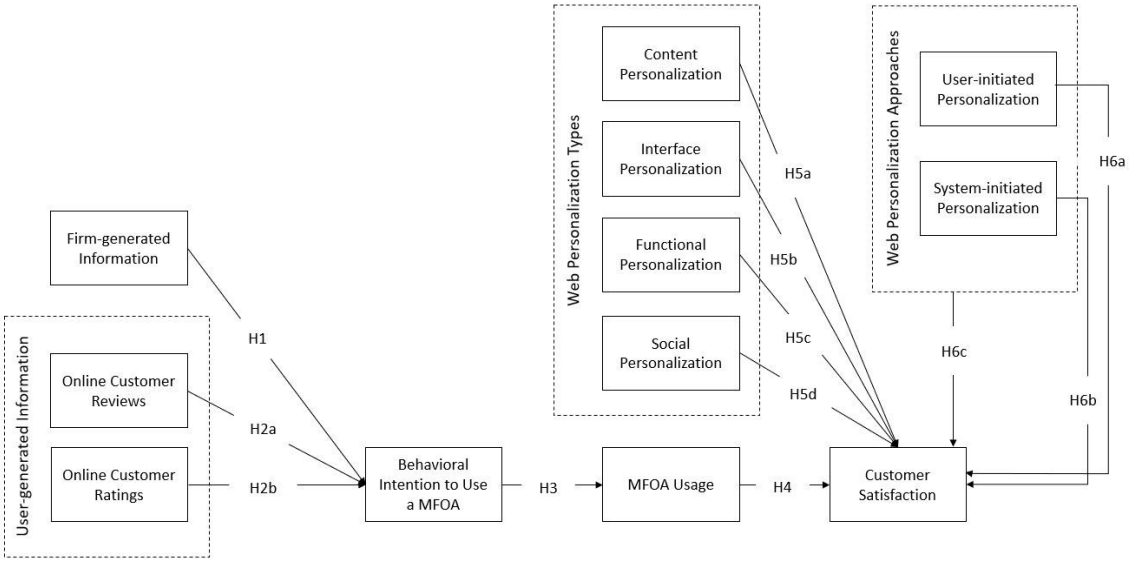

Figure 1 - Research model

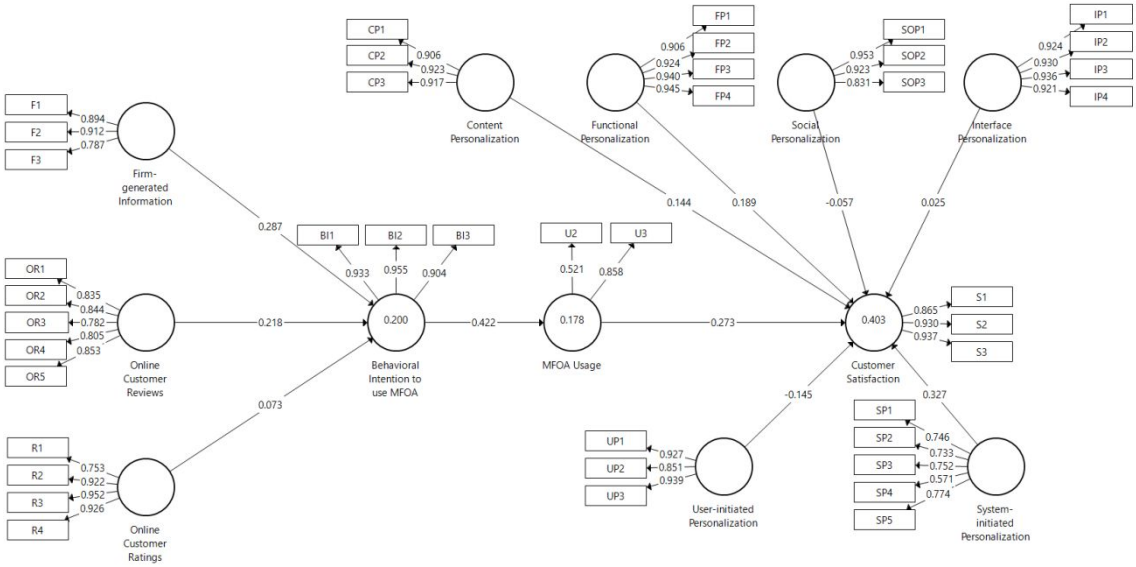

Figure 2 - Structural model results with path coefficients and R-squares

Construct	Items	References
Firm-generated information	**F1.** Mobile food ordering applications provide accurate information. **F2.** Mobile food ordering applications provide clear information. **F3.** Mobile food ordering applications provide up-to-date information.	Park, Lee & Han (2007); S. W. Lee et al. (2019)
Online Customer Reviews	**OR1.** The information from online reviews regarding mobile food ordering applications was credible. **OR2.** The information from online reviews regarding mobile food ordering applications was relevant to my needs. **OR3.** The information from online reviews regarding mobile food ordering applications was of sufficient dept. **OR4.** The information from online reviews regarding mobile food ordering applications was helpful for my decision making. **OR5.** The information from online reviews regarding mobile food ordering applications made me confident in using the applications.	Alalwan (2019)
Online Customer Ratings	**R1.** The overall rating given by other users to the platform has reduced the number of alternative platforms I have considered using. **R2.** The overall rating given by other users to the platform helped me to quickly identify the best and worst applications. **R3.** The overall rating given by other users to the platform facilitated my decision regarding the chosen application. **R4.** The overall rating given by other users to the platform allowed me to identify the application that could satisfy my needs.	Filieri (2015)
Behavioral Intention to Use Mobile Food Ordering Applications	**BI1.** It is likely that I will use mobile food delivery applications in the future. **BI2.** I will be using mobile food delivery applications in the future. **BI3.** I would recommend others to use mobile food delivery applications.	(Diop et al., 2019; Kimes, 2011)
Mobile Food Ordering	**U1.** I use mobile food ordering applications daily. **U2.** I use mobile food ordering applications frequently.	Greer & Murtaza (2003);

Mobile Food Ordering Applications Usage	**U1.** I use mobile food ordering applications daily. **U2.** I use mobile food ordering applications frequently. **U3.** I use mobile food ordering applications when it is appropriate	Greer & Murtaza (2003); Mohammadi (2015)
Customer Satisfaction	**S1.** I think I made the right decision to use mobile food ordering applications. **S2.** My experience placing orders using mobile food ordering applications has been satisfactory. **S3.** Overall, I am satisfied with mobile food ordering applications.	Thakur (2018)
User-initiated Personalization	**UP1.** It is important for me to be able to customize my mobile food ordering application. **UP2.** It is necessary for me to be able to customize my mobile food ordering application. **UP3.** Overall, I value mobile food ordering applications that allow me to customize the application according to my personal tastes or preferences.	QR*
System-initiated Personalization	**SP1.** Mobile food ordering applications understand my needs. **SP2.** Mobile food ordering applications know what I want. **SP3.** Mobile food ordering applications that are customized based on information that I have voluntarily provided (such as age and location) are valued. **SP4.** Mobile food ordering applications that are customized based on information that is automatically collected (such as pages visited and purchase history) are valued. **SP5.** Overall, I value mobile food ordering applications that are customized to my user preferences.	Chellappa & Sin (2005); Shahid & Ayaz (2018); QR*
Content Personalization	**CP1.** These personalized features provide me with desirable information. **CP2.** These personalized features provide me with information that is interesting to me. **CP3.** This type of personalization helps me to find information that is appropriate for my user profile.	QR*
Interface Personalization	**IP1.** These personalized features allow me to create a visually appealing environment for me.	Fan (2007); QR*

Interface Personalization	**IP1.** These personalized features allow me to create a visually appealing environment for me. **IP2.** These personalized features allow me to make the application aesthetically pleasing to me. **IP3.** These personalized features provide me with greater objectivity and visual simplicity according to my preferences. **IP4.** This type of personalization has a greater visual impact on me.	Fan (2007); QR*
Functional Personalization	**FP1.** These personalized features make the application more functional for me. **FP2.** These personalized features help me achieve my goal more efficiently. **FP3.** These personalized features make it more convenient to interact with the application in the long run. **FP4.** This type of personalization helps me to find the right information in an easier and more convenient way.	Fan (2007); QR*
Social Personalization	**SOP1.** These personalized features facilitate my interaction with others. **SOP2.** These personalized features introduce me to communities that are potentially interesting to me. **SOP3.** This type of personalization helps me keep in touch with people who are important to me.	Fan (2007); QR*

Table 1 - Constructs and measurement items

Notes:
*QR – Qualitative Research

Web Personalization Types		Web Personalization Features	
Types	**Goal**	**Features**	**Goal**
Content Personalization	To fulfill the customer's needs to have access to desired products, services or information. (Haiyan & Poole, 2009)	▪ Providing special offers and personalized promotions for the user. ▪ Providing personalized restaurant and meal recommendations.	To fulfill user's need to access to relevant information, according to his/her tastes and preferences.
Interface Personalization	To fulfill the customer's needs to have a functional and pleasant environment that is compatible with his/her sense of style. (Haiyan & Poole, 2009)	▪ The possibility to determine the size and arrangement (for example, list or grid) of restaurant icons in the application's feed. ▪ The possibility to choose the information that is displayed or not in the application's feed about each restaurant. ▪ The option to remove unwanted restaurants from the application's feed.	To fulfill the user's need to see only desirable information (by changing the presentation format or by removing undesirable information), making the application environment more appealing and functional.
Functional Personalization	To fulfill the customer's needs for efficiency and productivity. (Haiyan & Poole, 2009)	▪ The option to save favorite restaurants and meals. ▪ The option to create a wishlist to save the restaurants the user wants to try in the future. ▪ The option to be able to save multiple regular delivery addresses.	To meet the user's need to conveniently access the information needed to place an order (such as restaurant feed and delivery address), saving the user's time.
		▪ The option to pre-order a meal well in advance (hours or days).	To meet the user's need for organization and practicality, by allowing to schedule meal delivery.

Social Personalization	To fulfill the customer's needs for socialization by creating a platform that is consistent with the customer's desired level of privacy. (Haiyan & Poole, 2009)	▪ The possibility to write and access comments on other users' experiences.	To meet the user's need for social interaction, exchanging feedback and useful information about past consumer experiences.
		▪ The possibility to accumulate "rewards" (for example, discount coupons) and exchange or share them with personal contacts who also use the application.	To meet the user's need for social interaction, by sharing rewards with social circles.

Table 2 - Web personalization types and features

Indicator's Reliability Assessment				
Item	CR with the item	CR without the item	AVE with the item	AVE without the item
OR3	0.914	0.908	0.679	0.713
U2	0.657	1.000 [1]	0.503	1.000 [1]
SP4	0.841	0.844	0.517	0.575

Composite Reliability and Average Variance Extracted		
Construct	CR	AVE
Firm-generated Information	0.900	0.750
Online Customer Reviews	0.914	0.679
Online Customer Ratings	0.939	0.795
Behavioral Intention to Use MFOA	0.951	0.866
MFOA Usage	0.657	0.861
Content Personalization	0.939	0.838
Interface Personalization	0.961	0.861
Functional Personalization	0.962	0.862
Social Personalization	0.930	0.816
User-initiated Personalization	0.932	0.822
System-initiated Personalization	0.841	0.517
Customer Satisfaction	0.936	0.831

Table 3 - Indicator's reliability assessment (OR3, U2, and SP4), CR, and AVE

Notes:

[1] The removal of U2 would result in MFOA Usage becoming a single-item construct. According to Diamantopoulos et al. (2012), single-item constructs should be considered only if the following conditions are simultaneously verified: (1) small sample sizes ($N < 50$), (2) path coefficients ≤ 0.30, (3) items of the multi-item scale are highly homogeneous and (4) the items are semantically redundant, which is not the case.

Construct	BI	CP	CS	FI	FP	US	OR	OCR	IP	SOP	SP	UP
BI	0.931											
CP	0.423	0.915										
CS	0.661	0.445	0.911									
FI	0.374	0.227	0.508	0.866								
FP	0.439	0.499	0.420	0.216	0.929							
US	0.422	0.283	0.447	0.234	0.271	0.709						
OR	0.225	0.255	0.244	0.169	0.281	0.138	0.892					
OCR	0.351	0.333	0.380	0.343	0.223	0.140	0.475	0.824				
IP	0.268	0.352	0.285	0.136	0.496	0.216	0.370	0.260	0.928			
SOP	0.135	0.300	0.154	0.087	0.313	0.092	0.306	0.328	0.446	0.904		
SP	0.418	0.547	0.493	0.284	0.417	0.318	0.361	0.411	0.400	0.317	0.719	
UP	0.243	0.287	0.152	0.094	0.314	0.152	0.249	0.194	0.332	0.217	0.485	0.907

Table 4 – Fornell-Larcker criterion

Notes:
1. FI: Firm-generated Information; OCR: Online Customer Reviews; OR: Online Customer Ratings; BI: Behavioral Intention to Use MFOAs; US: MFOA Usage; CP: Content Personalization; IP: Interface Personalization; FP: Functional Personalization; SOP: Social Personalization; UP: User-initiated Personalization; SP: System-initiated Personalization; CS: Customer Satisfaction.

Hypotheses	Path Coefficients	t value	p value	Results
H1: FI → BI	0.285	4.431	0.000	Supported
H2a: OCR → BI	0.230	3.604	0.000	Supported
H2b: OR → BI	0.074	1.656	0.098	Not supported
H3: BI → US	0.422	7.827	0.000	Supported
H4: US → CS	0.273	5.617	0.000	Supported
H5a: CP → CS	0.144	2.568	0.010	Supported
H5b: IP → CS	0.025	0.447	0.655	Not supported
H5c: FP → CS	0.189	3.153	0.002	Supported
H5d: SOP → CS	-0.057	1.147	0.251	Not supported
H6a: UP → CS	-0.145	3.044	0.002	Not supported
H6b: SP → CS	0.327	5.215	0.000	Supported
H6c: UP à CS (H6a) > SP à CS (H6b)				Not supported

Table 5 - Hypotheses Summary

Notes:
1. FI: Firm-generated Information; OCR: Online Customer Reviews; OR: Online Customer Ratings; BI: Behavioral Intention to Use MFOAs; US: MFOA Usage; CP: Content Personalization; IP: Interface Personalization; FP: Functional Personalization; SOP: Social Personalization; UP: User-initiated Personalization; SP: System-initiated Personalization; CS: Customer Satisfaction.

Appendices

Appendix 1 – Loadings and cross-loadings

	BI	CP	CS	FI	FP	US	OR	OCR	IP	SOP	SP	UP
BI1	0.934	0.395	0.562	0.345	0.380	0.378	0.192	0.319	0.223	0.099	0.322	0.232
BI2	0.955	0.398	0.602	0.325	0.401	0.410	0.174	0.291	0.247	0.086	0.358	0.238
BI3	0.903	0.387	0.674	0.372	0.440	0.388	0.257	0.384	0.274	0.184	0.476	0.210
CP1	0.416	0.906	0.461	0.257	0.492	0.303	0.246	0.298	0.332	0.271	0.515	0.289
CP2	0.370	0.923	0.367	0.187	0.434	0.217	0.211	0.301	0.297	0.263	0.476	0.233
CP3	0.367	0.917	0.378	0.169	0.436	0.246	0.240	0.291	0.335	0.289	0.504	0.259
F1	0.335	0.210	0.409	0.894	0.201	0.175	0.145	0.253	0.126	0.084	0.210	0.085
F2	0.338	0.188	0.436	0.903	0.167	0.176	0.152	0.296	0.122	0.050	0.253	0.090
F3	0.298	0.191	0.476	0.796	0.196	0.264	0.142	0.319	0.105	0.095	0.279	0.070
FP1	0.372	0.476	0.341	0.197	0.906	0.209	0.232	0.167	0.420	0.262	0.341	0.278
FP2	0.396	0.455	0.382	0.186	0.924	0.265	0.261	0.232	0.442	0.320	0.385	0.275
FP3	0.425	0.455	0.403	0.194	0.940	0.247	0.258	0.233	0.461	0.291	0.389	0.314
FP4	0.432	0.472	0.426	0.228	0.945	0.282	0.287	0.214	0.511	0.289	0.428	0.298
OR1	0.310	0.306	0.321	0.305	0.249	0.094	0.329	0.865	0.221	0.279	0.332	0.156
OR2	0.290	0.290	0.271	0.254	0.220	0.083	0.413	0.811	0.260	0.344	0.344	0.147
OR3	0.246	0.281	0.377	0.329	0.117	0.132	0.367	0.687	0.180	0.248	0.355	0.129
OR4	0.310	0.243	0.292	0.273	0.140	0.143	0.361	0.865	0.162	0.185	0.330	0.161
OR5	0.283	0.252	0.316	0.263	0.182	0.128	0.494	0.792	0.247	0.299	0.338	0.203
PP1	0.251	0.323	0.267	0.135	0.466	0.254	0.371	0.196	0.924	0.403	0.359	0.325
PP2	0.236	0.341	0.270	0.119	0.417	0.205	0.341	0.246	0.930	0.472	0.392	0.325
PP3	0.245	0.316	0.259	0.105	0.498	0.166	0.332	0.235	0.936	0.374	0.352	0.286
PP4	0.260	0.327	0.262	0.146	0.462	0.175	0.328	0.241	0.921	0.405	0.379	0.296
R1	0.153	0.180	0.202	0.159	0.170	0.125	0.753	0.327	0.339	0.240	0.279	0.178
R2	0.203	0.227	0.211	0.166	0.292	0.136	0.922	0.359	0.343	0.300	0.311	0.223
R3	0.219	0.245	0.228	0.145	0.279	0.109	0.952	0.453	0.332	0.290	0.343	0.233
R4	0.219	0.250	0.229	0.141	0.247	0.126	0.926	0.438	0.318	0.262	0.349	0.246
S1	0.663	0.408	0.865	0.477	0.421	0.437	0.167	0.299	0.242	0.111	0.449	0.173
S2	0.559	0.381	0.930	0.454	0.340	0.398	0.250	0.327	0.245	0.165	0.419	0.125
S3	0.578	0.424	0.937	0.454	0.383	0.386	0.251	0.355	0.291	0.146	0.476	0.115
SOP1	0.165	0.292	0.180	0.100	0.332	0.110	0.294	0.292	0.457	0.953	0.290	0.197
SOP2	0.115	0.291	0.126	0.061	0.299	0.077	0.281	0.276	0.394	0.923	0.313	0.237
SOP3	0.025	0.204	0.063	0.072	0.145	0.029	0.254	0.266	0.314	0.831	0.258	0.131
SP1	0.400	0.330	0.444	0.292	0.300	0.293	0.247	0.340	0.303	0.189	0.746	0.330
SP2	0.258	0.369	0.339	0.256	0.172	0.207	0.251	0.324	0.228	0.354	0.733	0.262
SP3	0.277	0.438	0.316	0.169	0.340	0.210	0.277	0.255	0.294	0.216	0.752	0.404
SP4	0.141	0.309	0.201	0.137	0.170	0.085	0.196	0.272	0.190	0.149	0.571	0.209
SP5	0.343	0.518	0.399	0.139	0.463	0.278	0.316	0.243	0.383	0.230	0.774	0.494
U2	0.208	0.179	0.241	0.178	0.087	0.520	0.083	0.116	0.043	0.034	0.287	0.144
U3	0.369	0.224	0.379	0.169	0.265	0.858	0.111	0.090	0.227	0.088	0.200	0.091
UP1	0.229	0.247	0.135	0.074	0.259	0.140	0.204	0.160	0.276	0.185	0.387	0.927
UP2	0.125	0.217	0.062	0.052	0.232	0.098	0.214	0.150	0.289	0.209	0.447	0.851
UP3	0.256	0.294	0.171	0.109	0.333	0.155	0.254	0.198	0.335	0.207	0.492	0.939

Notes:

FI: Firm-generated Information; OCR: Online Customer Reviews; OR: Online Customer Ratings; BI: Behavioral Intention to Use MFOAs; US: MFOA Usage; CP: Content Personalization; IP: Interface Personalization; FP: Functional Personalization; SOP: Social Personalization; UP: User-initiated Personalization; SP: System-initiated Personalization; CS: Customer Satisfaction.

Appendix 2 – Variance Inflation Factor (VIF) values

Constructs	BI	US	CS
BI		1.000	
CP			1.663
CS			
FI	1.125		
FP			1.629
US			1.159
OR	1.249		
OCR	1.364		
IP			1.597
SOP			1.309
SP			1.847
UP			1.359

Notes:
1. FI: Firm-generated Information; OCR: Online Customer Reviews; OR: Online Customer Ratings; BI: Behavioral Intention to Use MFOAs; US: MFOA Usage; CP: Content Personalization; IP: Interface Personalization; FP: Functional Personalization; SOP: Social Personalization; UP: User-initiated Personalization; SP: System-initiated Personalization; CS: Customer Satisfaction.